

## Letters to the Editor: Reply (see pp. 185-186)

**Letter to the Editor by Göran Finnveden Concerning our Article  
"Life Cycle Assessment Study on Resilient Floor Coverings", Int. J. LCA 2 (2) 73-80 (1997)**

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Concerning the remarks of GÖRAN FINNVEDEN, we would like to direct the attention to the aims of our study – as explicitly outlined in the introduction of our article – and to their consequences:

The major goal of the study was to investigate a whole range of flooring systems, with a focus on their field of application. Our aim was not – and this has been justified by the results in our opinion – to find a possible candidate for e.g. "the best polymeric basic material for resilient floorings". Technically spoken, this question seems to be as difficult as the question concerning "the best packaging material" (Glass? Paper? Metal? Polymers?), where the general opinion amongst experts is now that it – in principle – cannot be answered in that form.

More in detail, we observe as one of the most interesting results that there are large differences between individual products which are not generated by statistical phenomena, but by clear differences in product formulations as developed by the producers to achieve the required product properties in a given technical field of application. For these differences, one example is given in Fig. 1 of our paper for the best documented material, PVC, showing a variation in one impact category (gross energy demand) which is as high as factor 3.

With respect to the final "LCA result", the effect of a specific polymer is of lower importance than, for instance, the amount of mineral filler, one of the predominant influencing factors. This is not surprising as filler levels may be as high as 70%. (By the way, this figure is achieved in a PVC flooring.) Similar effects are to be observed for the other polymers, but could not be shown due to the lower number of samples in combination with confidentiality issues.

⇒ In view of this variation, we would only assign a significant advantage or disadvantage to the following polymer/impact category combination in Table 1 of your letter:

- ◆ The chemical waste issue for PVC and the global warming potential issue for linoleum, both created by imperfections of the present waste management system

- ◆ and the benefit for linoleum in terms of non-renewable energy sources.

Therefore, if an end user was to make a choice on the basis of figures averaged for one type of polymer – instead of values for the individual products of his possible choice – the result would very probably not be the adequate one.

For this reason, we do not neglect, but strongly resist giving material oriented recommendations in cases where the results within one material group show larger differences than between most averages of the different material groups.

In this situation, a good question would be, "If the results show such a large variation between individual products, why don't you publish the results product by product, to provide a sound basis for a decision by the end user?" (This question was also posed by the panel of the Critical Review.)

The answer is that such a procedure would require such a high degree of consensus in all concerned groups, a much broader data base about more products and, last but not least, some progress in the standardization of Life Cycle Impact Assessment so that it will need quite some time until we will have related examples. It would be completely premature to ask for such an activity on the basis of facts that have been collected in the course of such a pilot study.

Another important issue is the limits of our study with respect to the impact categories. You will agree that a thing like "the total environmental performance", obtained under inclusion of all impact categories is at present something like a mirage. As stated in a prominent part in our study, we dedicatedly concentrated on facts that can be expressed in quantitative figures on the level of the impact assessment. On that level, our approach should be as different as possible from qualitative discussions, preliminary results and tentative conclusions, although it can be argued that the results would have to be reviewed soon since some facts arise from present research activities. This is our approach and it has been made clear in our paper that we do not have a good reason to modify it thus far.